

GLOSSARY OF TERMS

Accident (Aircraft)

An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, in which (a) a person is fatally or seriously injured as a result of being in the aircraft, or direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or direct exposure to jet blast, **except** when the injuries are from natural causes, self inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew: or (b) the aircraft sustains damage or structural failure which adversely affects the structural strength, performance or flight characteristics of the aircraft, and would normally require major repair or replacement of the affected component, **except** for engine failure or damage. when the damage is limited to the engine, its cowlings or accessories: or for damage limited to propellers, wing tips, antennas, tires, brakes, fairings, small dents or puncture holes in the aircraft skin: or (c) the aircraft is missing or is completely inaccessible. (ICAO Annex 13)

Application Domain

The region representing the design space for a system as constrained by a particular set of end-user requirements. For flight deck systems, this region can be bounded for example by design assumptions, input/output ranges, environmental conditions, vehicle class, envelope limits, crew configuration, and mission class.

Diagnostic

Serving to identify a particular disease or characteristic. (Webster's)

Error

Deviation from correct system state that may lead to a failure (Avizienis, 2004)

(1) An occurrence arising as a result of an incorrect action or decision by personnel operating or maintaining a system. (JAA AMJ 25.1309) (2) A mistake in specification, design, or implementation. (SAE ARP 4761)

Failure

Delivered service deviates from correct service (Avizienis, 2004)

A loss of function or a malfunction of a system or a part thereof. (SAE ARP 4761)

Feature

Abstraction of real-world phenomena. (ISO 19101) Note: a feature may occur as a type or an instance. Feature type or feature instance should be used when only one is meant.

Field of Regard

The area covered via a sensor.

Flight Deck

A volume of space designed to accommodate at least one human operator and the interfaces between the operator and the remainder of the flight deck system.

Flight Deck System

A system that includes (1) the entity(s) who have the authority and responsibility for directing the flight of an aircraft, (2) all sub-systems that directly interface to these entity(s), and (3) the interfaces between them. (see Flight Deck).

Formal Methods

Mathematically based techniques for the specification, development and verification of software and hardware systems.

Haptic (Interface)

Pertaining to the sense of touch (<http://en.wikipedia.org/wiki/Haptic>)

Hazard

A potentially unsafe condition resulting from failures, malfunctions, external events, errors, or a combination thereof. (SAE ARP 4761)

Incident

An occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation. (ICAO Annex 13) A *serious incident* is an incident involving circumstances indicating that an accident nearly occurred. Note 1.-- The difference between an accident and a serious incident lies only in the result. Note 2.-- Examples of serious incidents can be found in Attachment D of ICAO Annex 13 and in the ICAO Accident/Incident Reporting Manual (Doc 9156).

Integrity (Aeronautical Data)

A degree of assurance that an aeronautical data and its value have not been lost or altered since the data origination or authorized amendment. (ICAO Annex 14)

Meta-data

Data about data. (ISO 19115) Data that describes and documents data.

Mitigation

A method, procedure, function, or technology that can reduce the risk of a hazard occurring.

Multi-modal Interface

An interface that employs more than one interface mode between crew and aircraft systems.

Obstacle

All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that are located on an area intended for the surface movement of aircraft or that extend above a defined surface intended to protect aircraft in flight. (ICAO Annex 14)

Obstruction

Any object that penetrates an obstruction identification surface. Note that this is considered a subset of the “Obstacle” definition, Note (2) please refer to section 6.3 for a discussion of Special Cases. (FAA doc. 405)

Operator

A person, organization, or enterprise engaged in or offering to engage in aircraft operation. (ICAO Annex 13)

Phenomena Identification Ranking Table (PIRT)

For complex systems, the PIRT helps to identify areas where technology development is needed, where major challenges are, and where uncertainties are large. For specified Application Domains, the PIRT considers physical phenomena importance, conceptual model adequacy, verification and validation adequacy, and experimental adequacy. PIRT was originally developed to assess the safety of nuclear reactors and is critical for planning validation experiments because it helps establish both sufficiency and efficiency of the validation activities (Oberkampf, 2002)

Prognostic

A sign or symptom indicating the future course of a disease; a sign of a future happening; a portent. (Webster’s)

Quality

Totality of characteristics of an entity that bear on its ability to satisfy stated and implied needs. Note: entity is an element that can be individually described and considered. (ISO 8402) (ICAO Annex 15)

Random Errors

Random errors of observations refer to the basic inherent property that estimates of a random variable do not agree, in general, with its expectation.

Reliability

Continuity of correct service (Avizienis, 2004)

The probability that an item will perform a required function under specified conditions, without failure, for a specified period of time. (SAE ARP 4761)

Remediation

The act or process of correcting a fault or deficiency. (Webster's)

Risk

The frequency (probability) of occurrence and the associated level of hazard. (SAE ARP 4761)

Safety

Absence of catastrophic consequences on the user(s) and the environment (Avizienis, 2004)

Situational Awareness

The perception of elements in the environment, the comprehension of their meaning, and the projection of their status into the near future. (Endsley, 1990) For example, for pilots, the elements of the environment include, but are not limited to, the crew, passengers, aircraft systems, time, position, weather, traffic, and ATC constraints.

Terrain

The surface of the Earth containing naturally occurring features such as mountains, hills, ridges, valleys, bodies of water, permanent ice and snow, and excluding obstacles. Note: in practical terms, depending on the method of data collection used, a terrain model may represent the continuous surface that exists at the bare Earth, the top of the canopy or something in-between, also known as "first reflective surface".

Traceability

Ability to trace the history, application, or location of an entity by means of recorded identifications. (ISO 8402) (ICAO Annex 15)

Validation

Confirmation by examination and provision of objective evidence that the particular requirements for a specific intended use are fulfilled. (ISO 8402) (ICAO Annex 15)

“Solving the right equations.” (Roache, 1998)

Verification

Confirmation by examination and provision of objective evidence that specified requirements have been fulfilled. Objective evidence is information that can be proved true, based on facts obtained through observation, measurement, test, or other means. (ISO8402) (ICAO Annex 15)

“Solving the equations right.” (Roache, 1998)